

AMENDMENT TO THE DRAWINGS

The attached sheets of drawings include the following:

Replacement Sheets for FIGS. 1A, 1B, 2A, 2B, 2C, 2D, and 3.

The Replacement Sheet for FIG. 1A includes previously omitted reference numeral 21.

The Replacement Sheet for FIG. 1B includes previously omitted reference numeral 21.

The Replacement Sheet for FIG. 2A includes previously omitted reference numerals 22, 24, 222, and 242.

The Replacement Sheet for FIG. 2B includes corrections to the orientation of reference numerals 251 and 252.

The Replacement Sheet for FIG. 2C includes previously omitted numerals 22, 24, 222, and 242.

The Replacement Sheet for FIG. 2D includes corrections to the orientation of reference numerals 251 and 252.

New Sheets for FIGS. 4A, 4B, and 4C.

Attachments:

Replacement Sheets for FIGS. 1A, 1B, 2A, 2B, 2C, 2D, and 3.

Annotated Sheets showing changes to FIGS. 1A, 1B, 2A, 2B, 2C, and 2D.

New Sheets for FIGS. 4A, 4B, and 4C.

REMARKS

I. Status of the Application.

Claims 1-27 were pending in the application as filed. As of the date of the Office Action, Claims 21-23, 25 and 26 had been withdrawn from consideration.

In the Office Action, the Examiner:

(a) Objected to the drawings under 37 C.F.R. § 1.83(a) as not showing every feature of the embodiments specified in the claims;

(b) Rejected Claims 1, 6-10, 13, 15, and 17-19 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,896,004 to Feldman et al. ("Feldman");

(c) Rejected Claims 2, 4, and 5 under 35 U.S.C. § 103(a) as being unpatentable over Feldman as applied to Claim 1, and further in view of U.S. Patent No. 5,824,130 to Oga et al. ("Oga");

(d) Rejected Claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Feldman as applied to Claim 1, in view of Oga as applied to Claim 2, and further in view of U.S. Patent No. 5,680,005 to Soules et al. ("Soules");

(d) Rejected Claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Feldman as applied to Claim 7, in view of U.S. Patent No. 5,617,659 to Okubo ("Okubo");

(e) Rejected Claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Feldman as applied to Claim 13, in view of U.S. Patent No. 6,696,788 to Lapatovich et al. ("Lapatovich");

(f) Rejected Claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Feldman;

(g) Rejected Claim 27 under 35 U.S.C. § 103(a) as being unpatentable over Feldman in view of U.S. Patent No. 4,603,277 to Imamura et al. ("Imamura"); and

(h) Objected to Claims 20 and 24 as being dependent upon a rejected base claim.

In this response, Applicants respectfully: (i) submit new drawing figures; (ii) submit amendments to the specification; (iii) traverse the Examiner's rejections of Claims 1-19 and 27; and (iv) traverse the Examiner's objections to Claims 20 and 24.

II. Applicants' Amendments Do Not Constitute New Matter.

As suggested by the Examiner, Applicants respectfully submit new FIGS. 4A-C in response to the Examiner's objections under 37 C.F.R. § 1.83(a). FIGS. 4A-C show an embodiment of Applicants' disclosure comprising more than one vortex tube 23. Such an embodiment was amply disclosed in Applicants specification as filed, including, for example, in the paragraph beginning at page 6, line 22, of Applicants' specification, and in the paragraph beginning at page 10, line 17, of Applicants' specification. Accordingly, Applicants respectfully submit that new FIGS. 4A-C do not introduce new matter into the Application, and Applicants respectfully request that new FIGS. 4A-C be entered.

Applicants have made amendments to the specification to include references to new FIGS. 4A-C in relevant portions of the specification. Because these amendments merely address formal matters in the specification and are supported by the specification as originally filed,

Applicants respectfully submit that the amendments to the specification to include references to new FIGS. 4A-C do not introduce new matter in the Application, and respectfully request that such amendments be entered.

Applicants submit replacement sheets for FIGS. 1A, 1B, 2A, 2B, 2C, 2D, and 3. Such replacement sheets are formal versions of the informal drawings submitted with the Application as filed, and in some cases include additional or corrected reference numerals. Applicants respectfully submit that the replacement sheets for FIGS. 1A, 1B, 2A, 2B, 2C, 2D, and 3 do not introduce new matter in the Application, and respectfully request that such replacement sheets be entered.

Applicants submit several amendments to the "Brief Description of the Drawings" portion of the Application. Such amendments are intended to clarify the viewing angle of FIGS. 1A, 1B, 2B, and 2D. Because these amendments merely address formal matters in the specification and are supported by the specification as originally filed, Applicants respectfully submit that such amendments to the specification do not introduce new matter in the Application, and respectfully request that such amendments be entered.

Applicants respectfully submit an amendment to the specification to correct a typographical error in the paragraph that begins on page 9, line 17. Because this amendment merely addresses formal matters in the specification, Applicants respectfully submit that such

amendments to the specification do not introduce new matter in the Application, and respectfully request that such amendments be entered.

III. The Objection to the Drawings Under 37 C.F.R. § 1.83(a) Should Be Withdrawn.

Applicants respectfully submit that the objection to the drawings under 37 C.F.R. § 1.83(a) should be withdrawn because, as requested by the Examiner, new FIGS. 4A-C have been added to show the feature of Applicants' disclosure that is covered by the "plurality of tubes" limitation recited in Claim 27. Accordingly, Applicants respectfully request that the objection to the drawings under 37 C.F.R. § 1.83(a) be withdrawn.

IV. The Rejections of Claims 1, 6-10, 13, 15, and 17-19 Under 35 U.S.C. § 102(b) As Allegedly Being Anticipated by Feldman Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claims 1, 6-10, 13, 15, and 17-19 under 35 U.S.C. § 102(b) should be withdrawn because Feldman does not disclose all of the limitations of these claims.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). A rejection under section 102(b) can be overcome by showing that the prior art does

not disclose all of the limitations of the claims, or by amending the claims to patentably distinguish over the prior art. MPEP § 706.02(b).

Applicants respectfully submit that the rejections of Claims 1, 6-10, 13, 15, and 17-19 under 35 U.S.C. § 102(b) should be withdrawn because Feldman does not disclose all of the limitations of the claims against which it is asserted. Specifically, Feldman does not disclose "a tube having a first open end and a second open end and a continuous pathway communicating between said first open end and said second open end, said tube intersecting with said shell such that said first open end and said second open end reside outside said shell," which are limitations of Applicants' independent Claim 1.

To the contrary, Feldman expressly states that the portion of the "elongated cylindrical tubing having first and second ends 22, 24" in the bulbs disclosed in Feldman has a "generally elliptical portion 28 defining a hollow cavity 30 which is sealed from the external environment." (Col. 3, ll. 36-42) (emphasis added). Feldman also discloses that "[t]he cavity 30 is *hermetically sealed at opposite ends* and contains a fill of various materials." (Col. 3, ll. 45-47) (emphasis added). Feldman further discloses the use of sealing foils 40, 42, the purpose of which is to "*hermetically seal* [cavity 30] from the external environment." (Col. 4, ll. 4-5) (emphasis added.)

The bulb claimed in Applicants' independent Claim 1 includes the limitations "a tube having a first open end and a second open end and a continuous pathway communicating between said first open end and said second open end." Feldman does not disclose a bulb with such limitations.

For the foregoing reasons, Applicants' respectfully submit that the rejection of Claim 1 under 35 U.S.C. § 102(b) as being anticipated by Feldman should be withdrawn. Moreover, Applicants respectfully submit that the rejections of Claims 6-10, 13, 15, and 17-19 under 35 U.S.C. § 102(b) should be withdrawn, because each of these claims depends from and incorporates all limitations of Claim 1, which is not anticipated by Feldman or any other relevant prior art. Accordingly, Applicants respectfully submit that Claims 1, 6-10, 13, 15, and 17-19 should proceed to allowance.

V. **The Rejection of Claims 2-5, 11, 12, 14, 16, and 27 Under 35 U.S.C. §103(a) Should Be Withdrawn.**

To establish a *prima facie* case of obviousness it must be shown, *inter alia*, that "all of the claim limitations must be taught or suggested by the prior art." MPEP §§ 2143 and 2143.03 (citing *In re Royka*, 490 F.2d 981 (C.C.P.A. 1974)). Applicants respectfully submit that the rejection of Claims 2-5, 11, 12, 14, 16, and 27 under 35 U.S.C. § 103(a) should be withdrawn because the Examiner has failed to establish a *prima facie* case of obviousness with respect to any of these claims.

A. *The Rejection of Claims 2, 4 and 5 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman in View of Oga Should Be Withdrawn.*

Applicants respectfully submit that the rejection of Claims 2, 4 and 5 under 35 U.S.C. §103(a) should be withdrawn because the combination of Feldman and Oga does not disclose, teach or suggest all of the limitations of any of these claims.

Claims 2, 4 and 5 depend from independent Claim 1. The bulb claimed in Applicants' independent Claim 1 includes the limitations "a tube having a first open end and a second open end and a continuous pathway communicating between said first open end and said second open end, said tube intersecting with said shell such that said first open end and said second open end reside outside said shell." For the reasons given in Section IV of these Remarks, Feldman alone fails to disclose these limitations.

It is respectfully submitted that the combination of Feldman and Oga also fails to disclose these limitations. To the Feldman disclosure Oga adds a fluorescent lamp having a "fluorescent tube 1 wound spirally and inserted inside a globe 3," and therefore sealed from the external environment. (Col. 5, ll. 5-13; Figures 1 and 2) (emphasis added). The combination of Feldman and Oga includes no disclosure, suggestion or teaching of the "tube having a first open end and a second open end . . . , said tube intersecting with said shell such that said first open end and said second open end reside outside said shell," as claimed by Applicants in independent Claim 1.

For the foregoing reasons, Applicants respectfully submit that the combination of Feldman and Oga fails to teach, disclose or suggest all of the limitations of Applicants' independent Claim 1. Because Claims 2, 4 and 5 depend from independent Claim 1 and incorporate all of the limitations of independent Claim 1, it is respectfully submitted that the combination of Feldman and Oga fails to teach, disclose or suggest all of the limitations of claims 2, 4, and 5.

In addition, Claims 2, 4, and 5 depend from and incorporate all of the limitations of unobvious independent Claim 1. "If an independent claim is not obvious under 35 U.S.C. §103,

then any claim depending therefrom is not obvious." MPEP § 2143.03 (citing *In re Fine*, 837 F.2d 1382, 1385 (C.C.P.A. 1970)).

Accordingly, it is respectfully requested that the rejections of Claims 2, 4, and 5 under 35 U.S.C. §103(a) be withdrawn, and that Claims 2, 4, and 5 should proceed to allowance.

B. The Rejection of Claim 3 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman in View of Oga and Soules Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claim 3 under 35 U.S.C. §103(a) should be withdrawn because the combination of Feldman, Oga, and Soules does not disclose, teach or suggest all of the limitations of Claim 3.

Claim 3 depends from independent Claim 1. The bulb claimed in Applicants' independent Claim 1 includes the limitations "a tube having a first open end and a second open end and a continuous pathway communicating between said first open end and said second open end, said tube intersecting with said shell such that said first open end and said second open end reside outside said shell." For the reasons given elsewhere in these Remarks, the combination of Feldman and Oga fails to disclose these limitations.

It is respectfully submitted that the combination of Feldman, Oga, and Soules also fails to disclose these limitations. In combination with Feldman and Oga, Soules teaches a fluorescent lamp having an elongated tube that is "sealed from the external environment." (Col. 3, ll. 5-13). The combination of Feldman, Oga, and Soules does not disclose, teach or suggest the "tube having a first open end and a second open end . . . , said tube intersecting with said shell such

that said first open end and said second open end reside outside said shell," of Applicants' independent Claim 1.

For the foregoing reasons, Applicants respectfully submit that the combination of Feldman, Oga, and Soules fails to teach, disclose or suggest all of the limitations of Applicants' independent Claim 1. Because Claim 3 depends from independent Claim 1 and incorporates all of the limitations of independent Claim 1, it is respectfully submitted that the combination of Feldman, Oga, and Soules fails to teach, disclose or suggest all of the limitations of Claim 3.

In addition, Claim 3 depends from and incorporates all of the limitations of unobvious independent Claim 1. "If an independent claim is not obvious under 35 U.S.C. §103, then any claim depending therefrom is not obvious." MPEP § 2143.03 (citing *In re Fine*, 837 F.2d 1382, 1385 (C.C.P.A. 1970)).

Accordingly, it is respectfully requested that the rejection of Claim 3 under 35 U.S.C. §103(a) be withdrawn, and Applicants respectfully submit that Claim 3 should proceed to allowance.

C. The Rejection of Claims 11 and 12 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman in View of Okubo Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claims 11 and 12 under 35 U.S.C. §103(a) should be withdrawn because the combination of Feldman and Okubo does not disclose, teach, or suggest all of the limitations of Claims 11 and 12.

Claims 11 and 12 depend from independent Claim 1. The bulb claimed in Applicants' independent Claim 1 includes the limitations "a tube having a first open end and a second open

end and a continuous pathway communicating between said first open end and said second open end, said tube intersecting with said shell such that said first open end and said second open end reside outside said shell." For the reasons given in Section IV of these Remarks, Feldman alone fails to disclose these limitations.

It is respectfully submitted that the combination of Feldman and Okubo also fails to disclose these limitations. To the disclosure of Feldman, Okubo teaches a glass tube filled with an inert gas. (Col. 4, ll. 33-57). At each end of the glass tube, "electrode tubes 36, 36 having a cylindrical configuration . . . [are] formed." (Col. 5, ll. 13-19). As shown in Figures 1-4, 6(A), 6(B), 7(A), 7(B), and 8 of Okubo, the electrode tubes both comprise sealed ends. Accordingly, similar to Feldman, Okubo teaches tubes sealed from the external environment. The combination of Feldman and Okubo does not disclose, teach or suggest the "tube having a first open end and a second open end . . . , said tube intersecting with said shell such that said first open end and said second open end reside outside said shell," of Applicants' independent Claim 1.

For the foregoing reasons, Applicants respectfully submit that the combination of Feldman and Okubo fail to teach, disclose or suggest all of the limitations of Applicants' independent Claim 1. Because Claims 11 and 12 depend from independent Claim 1 and incorporate all of the limitations of independent Claim 1, it is respectfully submitted that the combination of Feldman and Okubo also fail to teach, disclose or suggest all of the limitations of Claims 11 and 12.

In addition, Claims 11 and 12 depend from and incorporate all of the limitations of unobvious independent Claim 1. "If an independent claim is not obvious under 35 U.S.C. §103, then any claim depending therefrom is not obvious." MPEP § 2143.03 (citing *In re Fine*, 837 F.2d 1382, 1385 (C.C.P.A. 1970)).

Accordingly, it is respectfully requested that the rejections of Claims 11 and 12 under 35 U.S.C. §103(a) be withdrawn, and Applicants respectfully submit that Claims 11 and 12 should proceed to allowance.

D. The Rejection of Claim 14 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman in View of Lapatovich Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claim 14 under 35 U.S.C. §103(a) should be withdrawn because the combination of Feldman and Lapatovich does not disclose, teach, or suggest all of the limitations of Claim 14.

Claim 14 depends from independent Claim 1. The bulb claimed in Applicants' independent Claim 1 includes the limitations "a tube having a first open end and a second open end and a continuous pathway communicating between said first open end and said second open end, said tube intersecting with said shell such that said first open end and said second open end reside outside said shell." For the reasons given elsewhere in these Remarks, Feldman alone fails to disclose these limitations.

It also is respectfully submitted that the combination of Feldman and Lapatovich also fails to disclose these limitations. To the disclosure of Feldman, Lapatovich adds a "double jacketed bulb 10 with an inner light transmissive jacket 12 that defines a sealed inner chamber

14." (Col. 2, ll. 60-66) (emphasis added). The Lapatovich reference further states that the "inner chamber 14 may be . . . sealed to be hermetic." (Col. 4, ll. 28-31) (emphasis added). The combination of Feldman and Lapatovich includes no disclosure, suggestion or teaching of the "tube having a first open end and a second open end . . . , said tube intersecting with said shell such that said first open end and said second open end reside outside said shell," of Applicants' independent Claim 1.

For the foregoing reasons, Applicants respectfully submit that the combination of Feldman and Lapatovich fails to teach, disclose or suggest all of the limitations of Applicants' independent Claim 1. Because Claim 14 depends from independent Claim 1 and incorporates all of the limitations of independent Claim 1, it is respectfully requested that the combination of Feldman and Lapatovich fail to teach, disclose or suggest all of the limitations of Claim 14.

In addition, Claim 14 depends from and incorporates all of the limitations of unobvious independent Claim 1. "If an independent claim is not obvious under 35 U.S.C. §103, then any claim depending therefrom is not obvious." MPEP § 2143.03 (citing *In re Fine*, 837 F.2d 1382, 1385 (C.C.P.A. 1970)).

Accordingly, it is respectfully requested that the rejection of Claim 14 under 35 U.S.C. §103(a) be withdrawn, and Applicants respectfully submit that Claim 14 should proceed to allowance.

E. The Rejection of Claim 16 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claim 16 under 35 U.S.C. §103(a) should be withdrawn because, for the reasons given in Section IV of these Remarks, Feldman does not disclose, teach, or suggest all of the limitations of Claim 1. As Claim 16 depends from independent Claim 1, Claim 16 inherits the limitations of the underlying independent claim. Therefore, it is respectfully submitted that Claim 16 also contains at least one limitation not found in Feldman.

In addition, Claim 16 depends from and incorporates all of the limitations of unobvious independent Claim 1. "If an independent claim is not obvious under 35 U.S.C. §103, then any claim depending therefrom is not obvious." MPEP § 2143.03 (citing *In re Fine*, 837 F.2d 1382, 1385 (C.C.P.A. 1970)).

Accordingly, Accordingly, it is respectfully requested that the rejection of Claim 16 under 35 U.S.C. §103(a) be withdrawn, and Applicants respectfully submit that Claim 16 should proceed to allowance.

F. The Rejection of Claim 27 Under 35 U.S.C. § 103(a) As Being Unpatentable Over Feldman in View of Imamura Should Be Withdrawn.

Applicants respectfully submit that the rejection of Claim 27 under 35 U.S.C. §103(a) should be withdrawn because the combination of Feldman and Imamura does not disclose, teach, or suggest all of the limitations of Claim 27.

Independent Claim 27 includes the limitations "a plurality of tubes, each having a first open end and a second open end and a continuous pathway communicating therebetween, each of said plurality of tubes intersecting with said shell such that said first open end and said second

open end of each of said plurality of tubes reside outside said shell and a portion of each of said plurality of tubes resides within said shell." For the reasons given elsewhere in these Remarks, Feldman alone fails to disclose these limitations.

It also is respectfully submitted that the combination of Feldman and Imamura also fails to disclose these limitations. To the disclosure of Feldman, Imamura adds a lamp having U-shaped inner tubes that are "fitted at both open ends thereof into the spot facings 26 . . . and thereafter fixed in an airtight manner to the spacer 25 by use of an adhesive 33." (Col. 2, ll. 44-52; Col. 2, l. 64 – Col. 3, l. 14) (emphasis added). Accordingly, the open ends of the U-shaped inner tubes are fixed within the lighting unit housing and outer bulb. The combination of Feldman and Imamura does not teach, suggest or disclose "a plurality of tubes, each having a first open end and a second open end and a continuous pathway communicating therebetween, each of said plurality of tubes intersecting with said shell such that said first open end and said second open end of each of said plurality of tubes reside outside said shell," as claimed in Applicants' independent Claim 27.

Applicants respectfully submit that the combination of Feldman and Imamura does not disclose or suggest all of the limitations of Claim 27. For these reasons, Applicants respectfully submit that the Examiner's rejection should be withdrawn and Claim 27 should proceed to allowance.

IV. The Objections to Claims 20 and 24 Because of Informalities Should Be Withdrawn.

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In view of the above remarks and arguments, Applicants respectfully submit that the objections to Claims 20 and 24 due to informalities should be withdrawn because both Claims 20 and 24 depend from unobvious independent Claim 1. Accordingly, Applicants respectfully request that Claims 20 and 24 should proceed to allowance.

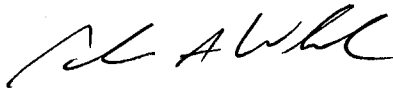
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CONCLUSION

For all of the foregoing reasons, it is respectfully submitted that Claims 1-20, 24 and 27 are allowable claims. Allowance of this Application is therefore respectfully requested. In the event Applicants have inadvertently overlooked the need for payment of any fees, Applicants conditionally petition therefore, and authorize any deficiency to be charged to deposit account 09-0007. When doing so, please reference the above-listed docket number. If there are any other further objections or rejections, the Examiner is invited to contact the undersigned to discuss the Application.

Respectfully submitted,

ICE MILLER LLP



Thomas A. Walsh,
Attorney No. 45,196
ICE MILLER LLP
One American Square, Suite 3100
Indianapolis, IN 46282-0200
Telephone: (317) 236-2100
Facsimile: (317) 592-5453

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